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Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

Chemical Review Committee
Sixth meeting
Geneva, 15–19 March 2010
Item 5 (b) (v) of the provisional agenda*

Listing of chemicals in Annex III to the Rotterdam Convention: review of notifications of final regulatory actions to ban or severely restrict a chemical: paraquat

Paraquat

Note by the Secretariat

Addendum

Additional supporting documentation provided by Sweden

The Secretariat has the honour to provide, in the annex to the present note, additional documentation received from Sweden to support its notification of final regulatory action for paraquat as a pesticide. The documentation has been reproduced as received, without formal editing by the Secretariat.

* UNEP/FAO/RC/CRC.6/1.

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Annex

1. **Extract from an application for re-registration of paraquat in Sweden**

2. **Paraquat sold on the Swedish market 1976–1983**

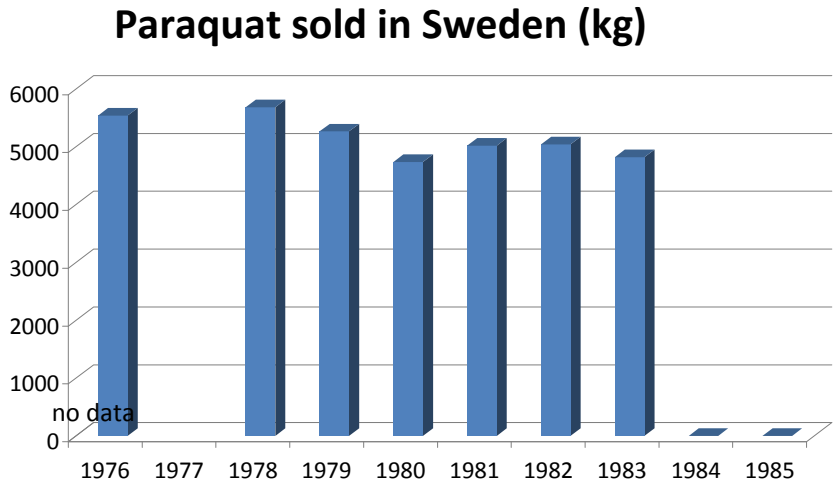
3. **Products control board decision on the application for registration of the product Gramoxone 80 – a herbicide containing the active ingredient paraquat.**

Extract from an application for re-registration of paraquat in Sweden

A3 USE OF THE SUBSTANCE	
3.1 Area of use	*Indicate for which plant diseases, pests etc. the product is intended; in which crop or on which material etc.; in which sector, e.g. agriculture or forestry, orchards, gardening, parks; if the product is intended for use in enclosed areas like greenhouses, stables, warehouses, storages, buildings for food production, domestic areas.* Against weed on arable land, in orchards and gardens and in plant nurseries. The use against quickgrass in potato cultivation is the far most dominating use
3.2 Dosage	*Indicate recommended dose, e.g. as amount active ingredient/area. If the substance shall be diluted before use, give information about with what and the concentration of the active ingredient in % (w/w or w/v)* 400-800 g active ingredient / ha which equals 5-10 kg/ha of the formulated product
3.3 Application	*Indicate the method of application, frequency, time of treatments. If the substance is applied by spraying give information about pressure in the container at operation and type of spraying device. Give information about recommended additives, if any (name, dosage).* Spraying: 300-600 l water /ha Application before the appearing of the crop (potatoes)
3.4 Compatibility	*Give information about the mixing properties of the substance and incompatibility with other pesticides or substances. If the product is recommended for application together with other pesticides, it should be noted specifically.* Compatible with Sencor and Reglone in potatoes. Both mixtures are used in practice
3.5 Efficiency etc.	….

Paraquat sold on the Swedish market 1976-1983

Year	Liter	kg a.i.		
1976	27712	*5542*		
1977	i.u			
1978	28426	*5685*		
1979	26328	5266	0.200015	20%
1980	23700	4740	0.2	20%
1981	25100	*5020*		
1982	25200	*5040*		
1983	24100	*4820*		
1984	0	0		
1985	0	0		



The format for the reporting was normally in litre product. For the years 1979 and 1980 amount active ingredient was given. According to the registration the product contained 20% active ingredient and hence this concentration is assumed for the entire time series.

PRODUCTS CONTROL BOARD

Meeting: 03.11.1983

Item 3: Application for registration of ’Gramoxone 80’ – a herbicide containing the active ingredient paraquat.

Rapporteurs: Jan Dich, Vilmos Stecko

History

Paraquat, a quatenary ammonium compound, was introduced as a pesticide for the control of weeds etc. in 1958. This product is absorbed rapidly through green plant parts and has a toxic effect on plants.

The substance is inactivated by soil contact and is consequently a highly effective herbicide. Paraquat has been on the Swedish market for many years and has been a popular pesticide. There is only one registered product containing paraquat at present, namely Gramoxone (reg. no 2025), which is a 20% liquid formulation of paraquat. The product was recalled by the registration holder in December following extensive discussions with the Products Control Office, which had strong objections to its continued use. The product may be used until the end of 1983.

Introduction

The registration holder Svenska ICI AB on 20.07.1983 submitted an application for registration of water-soluble granules, under the name 'Gramoxone 80', containing 8 wt-% paraquat as a dichloride salt.

The product is intended to be used in a similar way to Gramoxone, but principally against couch grass in potato crops. Consumption is estimated at 400-800 g active ingredient per hectare. The product is well documented and provides a sufficient basis for a precise evaluation.

Health effects

In conjunction with the world-wide use of paraquat, a large number of severe cases of poisoning have occurred. More than 600 deaths resulting from paraquat poisoning have been recorded since 1964. Serious poisoning incidents and individual deaths have also occurred in the Nordic countries. The risk of acute poisoning in paraquat exposure led to Gramoxone being raised from hazard class 2 to hazard class 1 in 1978. This reclassification resulted in a decrease in annual consumption of around 20 per cent. Some preparations with a low concentration of paraquat are classified in lower hazard classes in Denmark and Finland. No paraquat preparation is registered at present in Norway.

Knowledge that paraquat poisoning among other things can lead to severe lung changes which are difficult to reverse led to paraquat being addressed for evaluation under Nordic cooperation in the area of pesticides. A report on this subject was presented at the 24th Nordic plenary meeting in Vedbæk in Denmark in 1982. The report "Paraquat - En diskussion av toxicitet och humanrisk" ("Paraquat – A discussion of toxicity and human risk") (Ahlborg and Skerfving 1982) is attached. This report and data taken from a 'first draft report' from UNEP, ILO and WHO (1983) on the possible health hazard of diquat and paraquat show that low single doses (5-10 g) are always lethal, that doses as low as approx. 2 g paraquat had caused death, that several cases of fatal poisoning have been reported after single or repeated heavy contamination with paraquat on the skin and that a large number of different treatments have been tried in systemic poisoning with paraquat, where treatment success is extremely limited unless treatment is initiated very early. The delayed lung damage which paraquat exposure can cause several days to weeks after exposure is particularly dangerous.

Opinions have been obtained on this matter from the Poisons Information Centre. The summary of the statement issued deserves to be quoted in full:

> ”Paraquat is one of the few poisons for which the effects at a particular level of exposure cannot be influenced by therapy currently available. The problem is not particularly great in quantitative terms, especially in Sweden, but individual cases can pose particularly great problems. As emphasised in the summing-up by Ahlborg and Skerfving, non-seriously meant suicide attempts can therefore to a great extent be expected to lead to death. Cases of accidental poisoning are also associated with very great risks."

Present-day use of paraquat

The area of use for Gramoxone has been “Against weeds in arable crops, in fruit and garden cultivation and in plant nurseries”. The greatest use occurs in the counties of Blekinge and Skåne on potato crops. Paraquat is particularly effective against grass weeds (e.g. couch grass) and dicotyledonous weeds in these crops. The reasons why paraquat is still so popular despite other less toxic products being available on the market include the effectiveness of the product, ease of handling, price, no detectable residues in the crop and familiar old use without inconvenience if the product is handled carefully. Paraquat is used to a lesser extent as a herbicide in fruit crops etc.

Gramoxone - 'Gramoxone 80' – a comparison

The documentation now submitted shows that the water-soluble granules 'Gramoxone 80' pose less risk of poisoning than the liquid formulation now on the market. Several serious accidents have nevertheless occurred in the use of granule formulations, including some with a fatal outcome. In attempted suicides, 19% of cases involving granule formulations and 88% with liquid formulations led to death. All who consumed more than 6 g paraquat, which is equivalent to approx. 30 ml Gramoxone or 4 bags of a 'Weedol' preparation (Weedol is a formulation containing 2.5% paraquat and 2.5% diquat) died. Weedol is not registered in Sweden. Of 21 persons who had swallowed a maximum of 1.5 g paraquat, which is equivalent to 7.5 ml Gramoxone or one bag of Weedol preparation, one person died, but the majority of these had ingested less than 1 g paraquat. In the ingestion of between 1 and 6 g, the outcome was dependent on the time between ingestion of the preparation and commencement of treatment. The chance of survival was greatest if treatment was started within 5 hours. The formulation now proposed contains 8% paraquat and can therefore be considered to be somewhere midway between liquid Gramoxone and Weedol preparations with respect to risk. To summarise, it can be said that relatively small quantities even of the granular formulation may be associated with high accident risks.

Suitable substitutes

There are several products which could be imagined to replace paraquat, such as Roundup (reg. no 3220) containing glyphosate as active ingredient, Eptam (reg. no 2959) containing S-ethyl N,N-dipropylthiocarbamate as active ingredient, Sencor (reg. no 3020) containing metribuzin as active ingredient and Tritex (reg. no 3538) containing alloxidim sodium as active ingredient. The last three products mentioned can be used in potatoes, which has been the largest area of use for paraquat. All of them except Sencor are placed in hazard class 3. Although alloxidim is inactive against herbaceous weeds, according to information

from the Swedish University of Agricultural Sciences this is only a minor problem in potato cultivation.

Summary and conclusions

Use of paraquat poses a substantial risk of serious harm in connection with exposure. A large number of cases of poisoning with a fatal outcome have occurred, caused by ingestion of or exposure to liquid formulations. Several cases with a fatal outcome have also occurred with granular formulations. It is difficult to decide immediately whether poisoning has occurred or not. There is still a substantial risk of accidents because ingestion of or exposure to small quantities, even of the granular formulation, may prove fatal. Non-seriously meant suicide attempts are not discovered in time because of the delayed effect of poisoning. There is still a lack of effective methods of treatment with applicable therapy. The lung damage which can occur can therefore only be cured with the greatest difficulty. Paraquat is one of the few poisons whose effects at a certain level of exposure cannot be significantly influenced, and is therefore associated with very great risk in accidents. There are several satisfactory alternative products at present with substantially lower toxicity.

In view of what has been stated, the product ’Gramoxone 80’ containing the active ingredient paraquat is considered to entail such disadvantage from the point of view of health that it should not suitably be used for weed control purposes. The application for registration should therefore be rejected.

Proposal for decision

The Board proposes that pursuant to Section 27(1) of the Statutory Order (1973:334) on Products Hazardous to Health and the Environment the application for registration of the pesticide ‘Gramoxone 80’ be rejected.